Remarks

In the Office Action dated February 17, 2006, the Examiner rejected Claims 1-24 under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement. The Examiner asserts that one of ordinary skill would not be enabled by the Applicant's specification to perform the step of *adjusting the reducing environment time period such that SO_3 is reduced to SO_2 prior to selective catalytic reduction to achieve a desirable level of SO_3* as recited in Claim 1.

The Examiner also asserts that one of ordinary skill would not be enabled by the Applicant's specification to perform the step of *adjusting the reducing environment time period such that SO_3 is reduced to SO_2 to achieve a desirable level of SO_3* as recited in Claim 9.

The Applicant respectfully disagrees. For example, in the Specification, at the bottom of page 4, the Applicant's disclosure 60/544,724, filed February 14, 2004 for SO_3 Reduction Methods and Systems, teaches that rotated over-fired air increases the residence time of the staged combustion, which *de facto* reduces the residence time after staged combustion. Therefore, there is less residence time in an oxidizing environment upstream of the selective catalytic reduction relative to over-fired air or low NOx burners.

The Examiner further asserts that one of ordinary skill would not be enabled by the Applicant's specification to perform the step of *adjusting the reducing environment time period such that SO_3 is preferentially reduced to SO_2 to achieve a desirable level of SO_3* as recited in Claim 17. In addition to the passages enabling the Applicant's claimed steps referred to above, it is noted that the SO_3 is preferentially reduced relative to SO_2; that is, SO_3 goes down and SO_2 goes up. Without staging, the SO_2 would be preferentially reduced relative to SO_3. Thus, it is respectfully submitted that the enablement rejections of Claims 1-24 are improper, and Claims 17-24 are in condition for allowance.

Claims 9-16 also were rejected as anticipated by Kindig. Claim 9 describes a method for controlling SO_3 in a combustion process of a sulfur-containing fuel utilizing selective catalytic reduction for the control of NOx emissions. The method includes partially combusting the fuel in a first stage to create a reducing environment, adjusting the reducing environment time period such that SO_3 is reduced to SO_2 to achieve a desirable level of SO_3,

and combusting the remainder of the fuel and combustion intermediates in a second stage with oxidizing environment; thereby controlling the levels of SO_3 in the flue gases.

Kindig discloses a method for decreasing emissions of sulfur oxides and nitrogen oxides upon combustion of carbonaceous fuel material. The method includes forming a fuel material including refined particulate coal, a sulfur sorbent comprising calcium and magnesium, a sulfation promoter, and a catalyst. The composition is introduced into an oxygen rich combustion zone and combusted. The method may also include confining the combustion products in the exhaust system of a furnace to allow for reaction of sulfur oxides and the sulfur sorbent until the combustion product cools to a temperature below about 700° F.

The Examiner asserts that column 13, lines 8-23 of Kindig discloses adjusting a reducing environment time period since SO_3 and SO_2 are produced during combustion and reduction of SO_3 is inherently occurring. At column 13, lines 8-23, however, Kindig discloses that magnesium based sorbents readily react with sulfur trioxide at temperatures below about 1500° F, where magnesium sulfate is stable under the gaseous conditions in the boiler, but the reaction of magnesium-based sorbents with sulfur dioxide is too slow to be significant. To increase the formation of sulfur trioxide under these conditions, Kindig teaches addition of a catalyst for the reaction of sulfur dioxide to sulfur trioxide in the fuel so that sulfur trioxide is present for reaction with magnesium oxide to form magnesium sulfate.

Thus, Kindig is directed to increasing the level of sulfur trioxide in the combustion gas stream. Kindig does not consider adjusting the reducing environment time period such that SO_3 is reduced to SO_2. Reducing Kindig's sulfur trioxide to sulfur dioxide would limit the formation of magnesium sulfate prior to particulate collection, and permit undesirable levels of sulfur dioxide to remain in the combustion gas stream and enter the atmosphere. Thus, it is respectfully submitted that Kindig does not teach or suggest the Applicant's method of adjusting the reducing environment time period such that SO_3 is reduced to SO_2 and, accordingly, does not anticipate Claims 9-16.

Claims 1-8 were rejected as directed to inventions that would have been an obvious combination of Kindig and Beardmore. Claim 1 describes a method for controlling SO_3 in a combustion process of a sulfur-containing fuel utilizing selective catalytic reduction for the control of NOx emissions. The method includes partially combusting the fuel in a first stage to create a reducing environment, adjusting the reducing environment time period such that SO_3 is

reduced to SO_2 prior to selective catalytic reduction to achieve a desirable level of SO_3, and combusting the remainder of the fuel and combustion intermediates in a second stage with oxidizing environment.

The Examiner asserts that, although Kindig does not disclose prior to selective catalytic reduction, Beardmore teaches prior to selective catalytic reduction at column 6, lines 56-59 to column 7, lines 1-10 of the reference. As noted above, Kindig fails to disclose Applicant's *adjusting the reducing environment time period such that SO_3 is reduced to SO_2*. Because of this deficiency, it is respectful submitted that the hypothetical Kindig-Beardmore combination is unable to render Applicant's invention of Claims 1-8 obvious. Beardmore does not fill in the gaps. Rather, Beardmore uses a different technique than the claimed invention in an attempt to achieve a superficially similar result.

Specifically, Beardmore adds a sulfur scavenger, e.g. limestone, to fuel prior to burning. Beardmore's method uses calcium from the limestone to bind with sulfur from the fuel, thereby producing calcium sulfide, which is not Applicant's method of reducing SO_3 to SO_2. Similarly, there is no disclosure or suggestion in Beardmore that SO_3 is parameter as recited in the claimed limitation *prior to selective catalytic reduction to achieve a desirable level of SO_3*. These deficiencies also render the obviousness rejections of Claims 1-8 improper.

Applicant submits that all claims are allowable for the reasons given above and that the case is in condition for allowance. Such action is respectfully requested. However, if any issue remains unresolved, a telephone interview to expedite allowance and issue would be welcomed.

Respectfully submitted,

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